

Regulatory Applications of French Operating Experience

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Contents of the presentation

- Operating experience feedback in France
- Operating experience feedback for NPP
 - Specificity of the French fleet
 - Some significant domestic events
 - Some significant international events

 Application of the international OEF to the French fleet
- Operating experience feedback in other fields
 - Nuclear facilities
 - Medical installations
- Perspectives and concluding remarks

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Operating experience feedback in France

- Licensees required to implement a system for detecting events
- Events notified to ASN
- Part of the defence in depth system
- Not to identify or penalize any individual person or party
- Notification gradually extended to all the fields regulated and controlled by ASN: Two guides available on www.asn.fr
- Two step process:
 - Immediate notification
 - Report in two months
- Immediate action by ASN regional offices
- Importance to disseminate OEF



Operating experience feedback for NPPs Specificity of the French fleet

- Standard PWR Fleet
 - 58 reactors (+ FLA 3)
 - 1 technology : PWR
 - 1 licensee : EDF
- ⇒ Significant domestic OEF
- ⇒ Risk of "self-sufficiency"
- ⇒ Not to rely only on its domestic OEF
- Share of nuclear electricity: 80%
- ⇒ Need to prevent any generic anomaly





Operating experience feedback for NPPs Specificity of the French fleet

- About 12 000 per year interesting events for safety tracked by EDF
- About 900 significant events declared to ASN according to criteria defined in ASN guide
- Events analysis reviewed by ASN and IRSN
- About 100 significant events per year rated at level 1 of the INES scale and subject to a public information, around 1 rated at level 2
- Quarterly review meeting with ASN, IRSN and EDF
- Analysis of OEF by the Advisory committee of experts on a three-year basis
- International OEF taken into account (outlined by IRRS mission)



Note ASN/INC/01

RÉALISER LE RETOUR D'EXPÉRIENCE

OBIE

Le retour d'expérience des événements (REX) susceptibles d'affecter la sûreté nucléaire, la radioprotection ou l'environnement constitue une source d'amélioration fondamentale pour ces domaines.

Les dispositions réglementaires imposent aux exploitants' de déclarer les événements significatifs, ce qui permet à l'ASN de contrôler la manière dont ils les examinent et en tient des enseignements pour en éviter leux renouvellement et améliorer la súeteé. Plus égénéralement, l'ASN veille à ce que les exploitants effectment le REX des événements qui se sont produits en France ou, quand cela est pertinent, à l'étranger.

La présente note porte sus l'action de l'ASN en matière de REX selatif aux événements susceptibles d'affecter la sûseté midéaire, la radioprotection on l'environnement, notamment les événements significatifs déclarés à l'ASN. Elle établit le processus générique « Réalises le retoux d'expérience » constitutif du processus clef « 07. Contrôle » [13].

HISTORIOUE DES REVISIONS

Indice	Date d'application	Commentaires
0	17/11/2004	Création sous forme de note expérimentale ASN/INC/01 indice 0
1	31/05/2008	Création de la nouvelle ASN, description du processus « réaliser le retour d'expérience »
2	31/01/2009	Mise à jour pour tenir compte des évolutions relatives à l'échelle ASN/SFRO et échelle INES 2008

Archivage

SI-ASN/Référentiel et Publication/Référentiel/0.Référentiel documenture de l'ASN/07 Contrôles/7.2 événements significatifs/DNC 01 – REX. 1

Modificateur	Vérificateur	Approbateur
JR. JUBIN	J. COLLET	JC. NIEL
22/01/2009	23/01/2003	2461120-3
1) - Julan.	4	144

- 1 Les exploitants désignent
- les exploitants d'installation midéaire de base (INB) ;
- les fabricants d'équipements sous pression « nucléaires » spécialement conçus pour les INB ;
- les responsables d'activités de transports de substances radioactives ;
- les responsables d'activités nucleaires et chefs d'établissement dont l'activité comporte un risque d'exposition des personnes et travailleurs aux rayonnements ionisants et leurs préposés (article L 263-2 du code du travail).



Operating experience feedback for NPPs Some significant domestic events Fuel assemblies jammed

Events

Fuel assemblies jammed:

 at Tricastin 2 (September 2008, November 2009)

Gravelines 1 (August 2009)



Regulatory actions:

- inspections on site
- evaluation of potential consequences
- technical assessment of the temporary EDF procedure and of the solution to unjam the two fuel assemblies
- observation of the simulation of the solution on
 a full-scale mock- up

ASN asked EDF to improve

- The actions to prevent foreign materials in the vessel
- •The devices and criteria to check position of fuel assemblies during loading



Operating experience feedback for NPPs Some significant domestic events

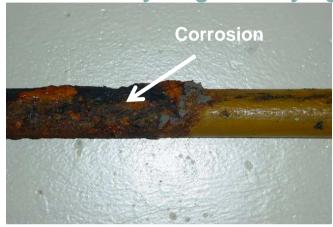
Explosive risk for hydrogen-carrying pipes

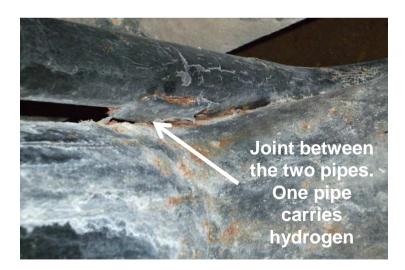
Events

ASN inspections in Cruas NPP (September and October 2008)

- Unclear identification of piping carrying hydrogen
- Inadequate maintenance
- Failure to label the piping
- No pipe work map

Potential safety risk was identified by ASN inspectors





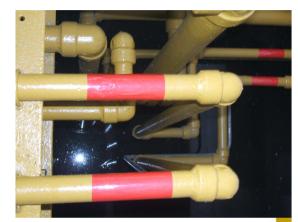


Operating experience feedback for NPPs Some significant domestic events

Regulatory actions

Explosive risk for hydrogen-carrying pipes

- Cruas NPP
 - information notice
 - formal notification: EDF has 3 months to comply with piping regulation
- EDF NPP fleet
 - ASN regulatory decision : EDF has 3 months to:
 - improve organisation;
 - control the pipes;
 - review in depth explosive risk
- ASN inspection on each NPP to check effectiveness of EDF action plan







Operating experience feedback for NPPs Some significant domestic events

Steam Generators' vibratory fatigue

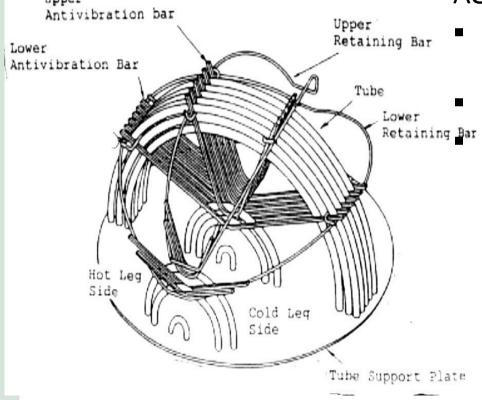
4 primary to secondary leaks since 2004

Regulatory actions:

ASN requested EDF to Upper Retaining Bar ASN requested EDF to plug all tubes with support defect on 900MWe reactors

perform new studies

develop qualified methods in order to better estimate TSP clogging and deposits on SG tubes





Operating experience feedback for NPPs Some significant international events

- The risk of sump clogging (Barsebäck 1992)
 - Extension of filtration area
 from 30-90m² to over 850m²
 - Follow-up of the studies of the physico-chemical and down stream effects



- Forsmark (25 July 2006)
 - Review by EDF
 - Independent review by IRSN at the request of ASN
- Potential failure in emergency diesel generator (October 2009)
 - Big end bearing damage can result in non-availability of the diesel engine
 - Information provided to ASN by the Spanish Authority
 - Replacement of the failing bearings achieved by EDF on November 2009

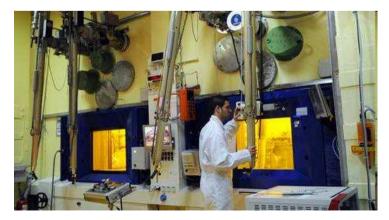


Operating experience in other fields Nuclear facilities

Underestimated plutonium residual masses

Event

- During decommissioning, residual masses of plutonium in some gloveboxes higher than expected (39kg instead of 8kg)
- Late notification to ASN (october 2009 instead of june 2009)



Regulatory actions

- INES rating : level 2
- Activities stopped by ASN
- ASN asked licensees about:
 - the list & status of the equipments regarding criticality;
 - the management of residual masses of fissile materials;
 - the need of compensatory measures



Operating experience in other fields **Medical facilities**

Unexpected side effects in a neurology service

Events

- unexpected side effects for 4 patients
- iterative treatments for cerebral arteriovenous malformations
- doses received around 16-17 Gy (skin).
- settings non optimized by the constructor
- inadequate operator training
- lack of safety culture

Regulatory actions

- 3 ASN inspections
- Information on ASN website
- ■1st feedback experience sent by ASN to professionals
- national action plan on interventional radiology proposed to the Health Ministry
- ASN inspections to be improved





















Perspectives and concluding remarks

- OEF is and stays the cornerstone of operational safety
- Key factors for efficiency of the OEF are
 - •adequate balance between reporting time and analysis deepness
 - •full cooperation nationally and internationally
- Emerging issues:
 - consolidate construction feedback experience
 - enhance OEF for all nuclear installations and other use of ionizing radiations (e.g. medical)
- "A nuclear accident somewhere is a nuclear accident everywhere"